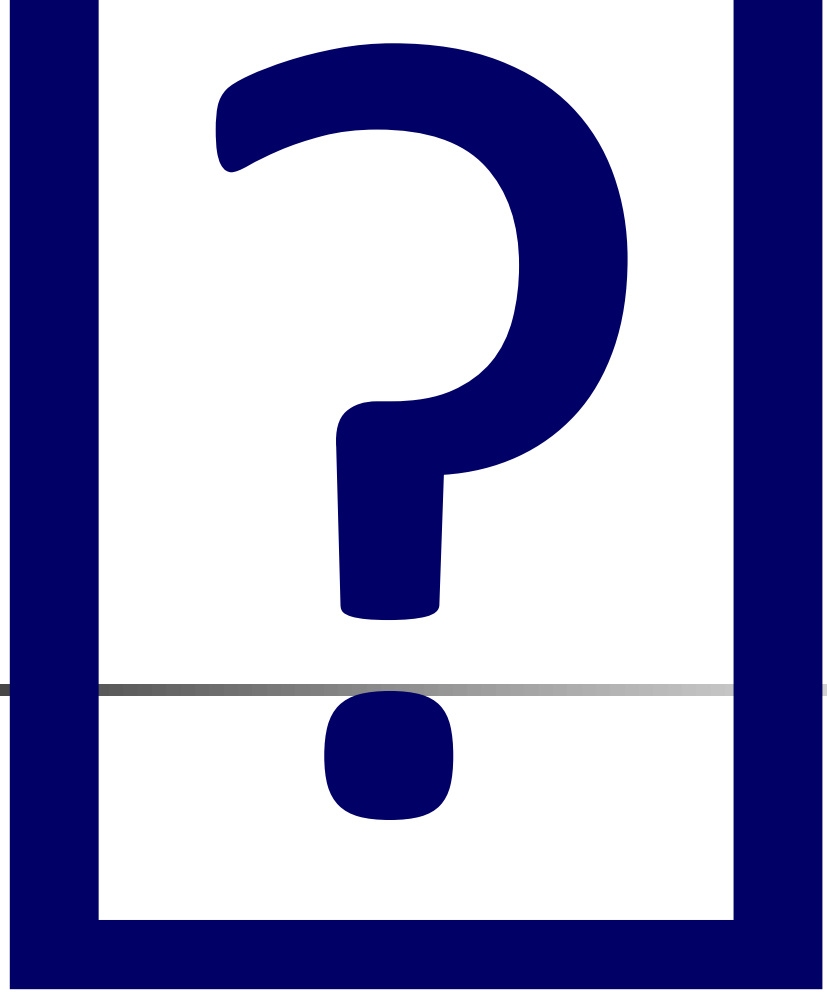

Gonococcal urethritis (Gonorrhea)

BY

Dr. Abdel Shakour A. Al Mohamady

Prof.of Dermatology,Venereology And Andrology

Faculty of Medicine

Al-Azhar University

Definition

Gonorrhea is an infectious disease involving the genito-urinary tract of both sexes which is usually transmitted by sexual intercourse.

Causative agent

Neisseria gonorrhoea (Gram negative diplococci, kidney shaped, non spore forming, with twitching motility, intra and extracellular, has the affinity to columnar epithelium).

Modes of infections

A) Sexual (common):

1- Heterosexual: urethra.

2- Homosexual: rectum

3- Orogenital: pharynx.

B) Asexual:

1- Neonatal: ophthalmia neonatorum

2- Childhood: vulvovaginitis

3- Adulthood: rare due to contaminated towels.

The affected areas (areas of columnar epithelium)

1- **In males:** prostate, seminal vesicle, epididymis, littre's glands and cowper's glands.

2- **Females:** endocervix, fallopian tubes, Skene's gland and Bartholin's ducts.

3- **Both males and females:** urethra, rectum, conjunctiva and oropharynx

The virulence factors

1- Pili: fine slender hair like structures for:

attachment to the columnar epithelium

2-Production of endotoxin:

lipopolysacchrides in the membrane have endotoxic activity.

3- Inhibition of host immunity:

Gonococci **proteases** inactivate IgA immunoglobulins.

Pathological effects

1- Mucosa: patchy destruction→ burning micturition and painful symptoms.

2- Submucosa: PNLs accumulation→ pus and discharge.

3- Fibrosis: obstruction in epididymis and fallopian tubes.

Clinical picture

1- In males:

a- uncomplicated

b- complicated (3 skin, 3 urethra, 3 gland and 3 internal organs).

2- females:

a- uncomplicated

b- complicated

3- Both:

a- Extragenital (conjunctiva, oropharynx and rectum)

b- Disseminated (iridocyclitis, arthritis, perihepatitis, dermatitis and septicemia).

4- Infants and children

a- Eye infection.

b- Genital infection

C/P in males

1- Uncomplicated:

IP: 2-7 ds

Symptoms:.

a- Urethral discharge: profuse, yellow and purulent.

b- Micturation symptoms: mild burning micturation up to severe dysuria, urgency, frequency and terminal hematuria (post. urethritis).

Signs:

a-Penis: Discharge oozing spontaneously or on squeezing, inflamed swollen urethral meatus and tenderness along the course of urethra.

b- Inguinal lymph nodes: slightly enlarged and tender.

c- 2 glass urine test:

- Haziness and Pus threads in the first glass only → anterior urethritis
- In the first and second→ ant. and post.

Complicated

1- Skin:

- balanitis
- posthitis
- lymphangitis and edema→ bull – head clap syndrome

2- Urethra:

- Periurethral abscess
- Fistula→ watering can perineum
- Stricture

3- Glands:

- **Tysonitis:** asymptomatic or as swelling
  on either side of the frenulum,
  diagnosed by urethroscopy.
- **Littritis:** multiple tender swellings along the roof sides of urethra.
- **Cowperitis:** Fever or painful defecation
  Painful tender swelling on either sid of median raphe of perineum.
  Felt between thumb on the perineum and index finger in the rectum.

4- Internal organs:

- **Prostatitis:** fever, micturation symptoms, painful defecation and constipation.

PR tender swollen prostate

Contraindicated in prostatic abscess and severe urethritis.

2 glass urine test: haziness in both glasses.

- **Seminal vesiculitis:**

  Similar to prostatitis but with haemospermia.

  PR: felt as tender structures above the prostate (normally not felt).

- Epididymitis:

- Acute scrotal pain and swelling
- Tender swollen epididymis with a groove between it and testis or without if testis is involved.
- Fibrosis leads to obstructive infertility.

C/P in Females

1-Uncomplicated:

symptoms:

1- Asymptomatic (50 %).

2- Micturation symptoms (no hematuria)

3- Genital discharge (from cervix and or urethra

Signs:

1- Urethral meatus is inflammed and swollen with pus oozing

2- Cervix is enlarged, congested with mucopurulent discharge

3- Slightly enlarged tender inguinal lymph nodes.

2-Complicated:

1- Skin and mucous surfaces: (due to excessive discharge)

- Vulvitis (rare) ?
- Vaginitis (rare) ?
- Proctitis → discharge and tenesmus.

2- Urethra:

- Abscess
- Fistula
- Stricture (very rare) ?

3-Glands:

- **Cervical glands**→ Nabothian follicle (bluish cysts due to obstruction of the ducts of these glands as a result of chronic infection).
- **Skenitis:**
- Dysuria and pus drops on squeezing of the urethra.
-Swelling on either side of the urethra felt by index finger in the vagina.

- Bartholinitis:

- Severe pain preventing sitting or walking.
- Swelling and redness on lower third of labia majora.
- Can be felt by index in vagina and thumb on lower third of labia majora.
- Pus can be expressed on inner sides of labia minora.

4-Internal organs:

Spread of infection to endometrium, fallopian tubes and peritoneum→ PID. (10 % 0f untreated cases), associated with infertility, ectopic pregnancy.

C/P in females and males

A) Extragenital:

1- Gonococccal conjunctivitis:

Due to contamination with fingers or towels.

C/P: swelling of eye lids, purulent discharge, conjunctival injection→ Keratitis and corneal ulceration.

2- Oropharyngeal Gonorrhoea

Due to orogenital contact between males and females (common between male homosexuals).

C/P: sore throat with mucopurulent exudate.

Affected areas are: uvula, palate, tongue and lips.

3-Rectal gonorrhoea

It occurs in males and female due to anal intercourse, in 50 % of females due to excessive genital discharge.

C/P: mostly asymptomatic, may be soreness, itching and discharge.

B) Disseminated:

1- Gonococcal iridocyclitis:

As a result of blood spread and it is hyper sensitivity reaction.

2- Gonococcal arthritis:

More common in females in the form of suppurative arthritis.

C/P: acute onset of high fever, severe arthralgia, hot red swollen large joint (inflamed synovial membrane) → destruction and ankylosis.

Diagnosed by

1- x ray → narrow joint space due to destructed cartilage.

2-Aspiration and culture.

3- Gonococcal perihepatitis (Fitz. Hugh - Curtis syndrome:

- Due to blood spread
- Acute onset of fever, nausea and pain in the right upper abdomen radiating to shoulder and increasing by cough.

4- Gonococcal dermatitis:

- Due to capillary embolization by gonococci and release of endotoxins after phagocytosis.
- Bilateral and symmetrical vesicular or pustular lesions on erythematous patches.
- Systemic manifestations in the form of fever, headache and arthralgia.
- Mucous membrane affections in the form of oral vesicles and ulcerations.

5- Gonococcal septicaemia:

- **Mild:** fever, skin rash and arthritis.
- **Severe:** carditis, hepatitis, osteomyelitis and meningitis

Factors that help dissemination

1- Host factors:

a- The presence of menstruation and pregnancy.

b- Absent or weak C5,6,7,8 and presence of immune complexes.

2- Organism factors:

a- Auxotype: AUH type

b- Antigenic variation.

C/P in infants and children:

1- Eye affection (ophthalmia neonatorum):

- It appears as purulent discharge in the first 21 days.
- Gonococci are responsible for 20 % of cases in the first week while chlamydia are responsible for 80 % in the 2nd or 3rd week.

- Other manifestations include swollen eye lids, congested conjunctiva , oozing pus, preauricular lymph nodes enlargement, corneal ulceration, blindness and invasion of CNS.

- TTT by local and systemic antibiotics.

2- Genital infection:

In boys due to child abuse→ dysyria, urethral discharge or proctitis.

In girls due to abuse or indirectly through contaminated towels and lavatory seats. Severe vulvovaginitis may occur due to thin alkaline vagina. → dysyria, genital discharge or proctitis.

Laboratory Diagnosis

Laboratory Diagnosis depends on :

- Microscopic examination .
- Culture .
- Biochemical reaction
- Fluorescent antibody test
- Serology.

Microscopic examination

By Gram's stain, examination under the microscope with an oil - immersion lens shows intra and extracellular Gram negative (Red staining) diplococci to be detected .

Culture

Many selective media have been known. They are:

1- **Transport media** (Stuart's media).

2- **Growth media** (modified Thayer Martin media).

3- **Transport and growth media** (Trans – growth media).

Biochemical reactions

1-The oxidase test

It has been of great value in the detection of gonococcal colonies in mixed culture .

2- Fermentation reaction of the Neisseria :

	Glucose	Maltose	Sucrose
N.gonorrhoea	+	-	-
N.Menengitidis	+	+	-
N.Catarrhalis	+	+	+
N.Pharyngitis sicca	-	-	-

Fluorescent antibody methods : -

- ***Direct***
- ***Indirect***

Serology

Serum immunologlobulins in cases of gonorrhea . The mean levels for Ig G , IgA and IgM mere significantly higher than in a normal control group .

Treatment of gonorrhea

By mouth :

1- Penicillin

- Cheapest -Most effective -Least toxic .

* Ampicillin : 2-3 gm by mouth + 1 gm probenicid orally .
* Amoxycillin : 3 gm by mouth + 1 gm probenicid orally .
* Pivampicillin hydrochloride : 4 caps. (350 mg) by mouth + 1 gm probenicid orally .
* Talampicillin : 1-5 gm + 1 gm probenicid orally .

2- Beta-lactamase inhibitors **:** Clavulinic acid

It inhibits lactamase by binding with the enzymes and when combined with amoxycillin acts effectively against PPNG.

Clavulinic acid 125 mg + amoxycillin in a capsule form (Augmentin) 8 capsules are given in PPNG .

3- Cotrimoxazole : (sulphamethoxazole 400 mg + trimethoprim 80 mg) in a tablet form . 4 tablets by mouth twice daily for 2 days (4 doses of 4 tab.) or 2x2x5 days .

4- ***Quinolone derivatives:*** These drugs are structurally related to nalidexic acid.

- **Acrosoxacin :** 300 mg by mouth on an empty stomach effective in both PPNG and non PPNG infections. Drowsiness, dizziness and headache are common.
- **Norfloxacin :** Two tablets orally in a single dose gives 100 % cure rate in PPNG

- **Ciprofloxacin** : 250-500 mg by mouth in a single dose, effective in genital, oral, and rectal infections.
- **Enoxacin** : It should not be given to patients who suffer from epilepsy in any form. Two 200 mg oral doses 12 hours apart or as a single dose of 600 mg, useful in oral, rectal, and uncomplicated genital infections.

By injection

1- Procaine penicillin :

4.8 million I.U. of procaine penicillin I.M. injection [2.4 in each buttock].

preceded by 2 gm probenicid orally

2- Spectinomycine :

is very effective against PPNG and also against tetracycline resistant strains , 2 gm by deep I.M. injection , safe if used during pregnancy.

3- Cephalosporins :

- 2nd generation: Cefuroxine sodium 1.5 gm I.M.I.
- 3 rd generation: Cefuroxine disodium, 125-250 mg I.M.I. Single dose gives 98 – 100% cure rate in genital gonorrhea. 250 mg is also effective in oral and ano rectal infections, 2nd and 3rd generation are better than 1st generation.

4- Monobactam derivatives :

- **Aztereonam** : 1 gm I.M.I is very effective in PPNG whatever the mechanism of resistance.

Recommended Therapy

1- Oral penicillin.

2- Oral tetracyclin where co infection with chlamydia is considered.

3- Oxytetracyclin 500 mg caps/ 6 hours/ 7d.

4- Doxycyclin 100 mg caps/ 12 hours/ 7d

OR

- Cefoxitin 1-2 gm I.M.I / 8 hours OR I.V. infusion/ 8 hours in severe cases up to 12 gm daily for 7 days.
- High dosage of cefoxitin may cause renal failure.
- Intra-uterine devices should be removed before treatment.

Tests of cure

- Smears and cultures from urethra and cervix at least two occasions should have given negative results.

Treatment of other gonococcal infections

I- Disseminated disease :

1- **Hospitalization :** Easy injection easy taking smears and cultures and rest.

2- **Aqueous crystalline penicillin** G 10 million I.U. by slow I.V. infusion 2-3 days and complete by ampicillin 500 mg /6 hours to complete 10 days + I gm probenicid orally /day/10 days, tetracycline 500 mg/6 hours/10 days.

3- PPNG :

1. Spectinomycin : 2 gm I.M.I. twice daily /5 days.
2. Ceftriaxone : 250 mg I.M.I. or I.V.I. twice daily for 7 days .
3. Cefotaxime : 500 mg I.V.I. 4 times/day/7 days .
4. Cefoxitime : 1 gm I.V.I. 4 times/day/7 days .
5. Joint pain requires : analgesics , splinting for 48 hours.

II- Anal and rectal disease :

1. Quinolones in a single dose : Ciprofloxacine 250-500 mg as a single dose orally .
2. 5 days course of ampicilline or cotrimoxazole is usually very effective.

III- Infection in infants :

1. Crystalline penicillin G : 50.000 I.U. per Kg body weight I.M. for at least 4-7 days .
2. For the first 24 hours irrigation of the eyes with normal saline or antibiotic eye drops .
3. If the mother is known to have gonorrhea , the infant receive single injection of 50.000 I.U. of aqueous crystalline penicillin G .

IV- Infection in the prepubertal children

1. **Penicilline G :** 100.000 I.U. /Kg body weight I.M.I. + 0.5 gm probenicid orally .
2. **Amoxycilline :** 50 mg /Kg body weight by mouth + 0.5 gm probenicid for those who are allergic to penicillin .
3. **Spectinomycine :** 75 mg/Kg body weight by I.M.I. .
4. **Cotrimoxazole :** by mouth in older children .


THANK YOU